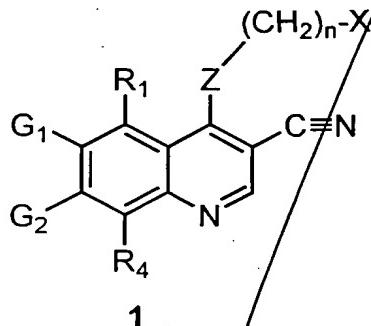


ABSTRACT:

ans A2
av This invention provides compounds of formula **1** having the structure

5



wherein:

X is cycloalkyl of 3 to 7 carbon atoms, which may be optionally substituted with one or more alkyl of 1 to 6 carbon atom groups, or is a pyridinyl, pyrimidinyl, or phenyl ring wherein the pyridinyl, pyrimidinyl, or phenyl ring may be optionally mono-, di-, or tri-substituted with a substituent selected from the group consisting of halogen, alkyl of 1-6 carbon atoms, alkenyl of 2-6 carbon atoms, alkynyl of 2-6 carbon atoms, azido, hydroxyalkyl of 1-6 carbon atoms, halomethyl, alkoxymethyl of 2-7 carbon atoms, alkanoyloxymethyl of 2-7 carbon atoms, alkoxy of 1-6 carbon atoms, alkylthio of 1-6 carbon atoms, hydroxy, trifluoromethyl, cyano, nitro, carboxy, carboalkoxy of 2-7 carbon atoms, carboalkyl of 2-7 carbon atoms, phenoxy, phenyl, thiophenoxy, benzoyl, benzyl, amino, alkylamino of 1-6 carbon atoms, dialkylamino of 2 to 12 carbon atoms, phenylamino, benzylamino, alkanoylamino of 1-6 carbon atoms, alkenoylamino of 3-8 carbon atoms, alkynoylamino of 3-8 carbon atoms, carboxyalkyl of 2-7 carbon atoms, carboalkoxyalkyl of 3-8 carbon atoms, aminoalkyl of 1-5 carbon atoms, N-alkylaminoalkyl of 2-9 carbon atoms, N,N-dialkylaminoalkyl of 3-10 carbon atoms, N-alkylaminoalkoxy of

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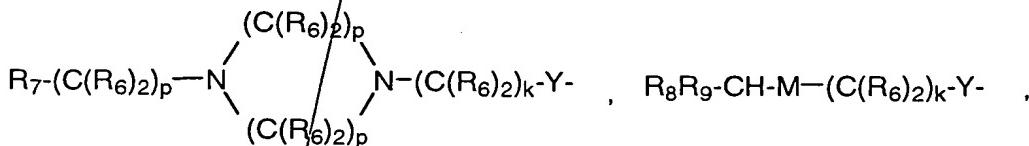
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2-9 carbon atoms, N,N-dialkylaminoalkoxy of 3-10 carbon atoms, mercapto, and benzoylamino;

Z is -NH-, -O-, -S-, or -NR- ;

R is alkyl of 1-6 carbon atoms, or carboalkyl of 2-7 carbon atoms;

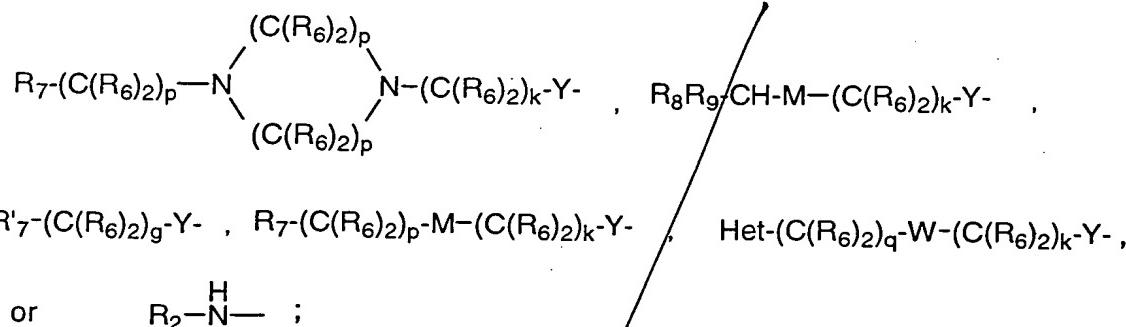
- 5 G₁, G₂, R₁, and R₄ are each, independently, hydrogen, halogen, alkyl of 1-6 carbon atoms, alkenyl of 2-6 carbon atoms, alkynyl of 2-6 carbon atoms, alkenyloxy of 2-6 carbon atoms, alkynyloxy of 2-6 carbon atoms, hydroxymethyl, halomethyl, alkanoyloxy of 1-6 carbon atoms, alkenoyloxy of 3-8 carbon atoms, alkynoyloxy of 3-8 carbon atoms, alkanoyloxymethyl of 2-7 carbon atoms, alkenoyloxymethyl of 4-9 carbon atoms, alkynoyloxymethyl of 4-9 carbon atoms, alkoxy of 1-6 carbon atoms, alkylthio of 1-6 carbon atoms, alkylsulphinyl of 1-6 carbon atoms, alkylsulphonyl of 1-6 carbon atoms, alkylsulfonamido of 1-6 carbon atoms, alkenylsulfonamido of 2-6 carbon atoms, alkynylsulfonamido of 2-6 carbon atoms, hydroxy, trifluoromethyl, trifluoromethoxy, cyano, nitro, carboxy, carboalkoxy of 2-7 carbon atoms, carboalkyl of 2-7 carbon atoms, phenoxy, phenyl, thiophenoxy, benzyl, amino, hydroxyamino, alkoxyamino of 1-4 carbon atoms, alkylamino of 1-6 carbon atoms, dialkylamino of 2 to 12 carbon atoms, N-alkylcarbamoyl, N,N-dialkylcarbamoyl, N-alkyl-N-alkenylamino of 4 to 12 carbon atoms, N,N-dialkenylamino of 6-12 carbon atoms, phenylamino, benzylamino,



R₇-(C(R₆)₂)_g-Y- , R₇-(C(R₆)₂)_p-M-(C(R₆)₂)_k-Y- , or Het-(C(R₆)₂)_q-W-(C(R₆)₂)_k-Y-

with the proviso that either G₁ or G₂ or both G₁ and G₂ must be a radical selected from the group

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Y is a divalent radical selected from the group consisting of

$-(CH_2)_a-$, $-O-$, and $-N-$
 R_6

R₇ is -NR₆R₆, -J, -OR₆, -N(R₆)₃ + or -NR₆(OR₆);

R'_7 is $-NR_6(OR_6)$, $-N(R_6)_3^+$, alkenoxy of 1-6 carbon atoms, alkynoxy of 1-6 carbon atoms, N-alkyl-N-alkenylamino of 4 to 12 carbon atoms, N,N-dialkenylamino of 6-12 carbon atoms, N-alkyl-N-alkynylamino of 4 to 12 carbon atoms, N-alkenyl-N-alkynylamino of 4 to 12 carbon atoms, or N,N-dialkynylamino of 6-12 carbon atoms with the proviso that the alkenyl or alkynyl moiety is bound to a nitrogen or oxygen atom through a saturated carbon atom;

M is $>\text{NR}_6$, $-\text{O}-$, $>\text{N}-(\text{C}(\text{R}_6)_2)_p\text{NR}_6\text{R}_6$, or $>\text{N}-(\text{C}(\text{R}_6)_2)_p-\text{OR}_6$;

15 W is $>\text{NR}_6$, -O- or is a bond;

Het is a heterocycle selected from the group consisting of morpholine, thiomorpholine, thiomorpholine S-oxide, thiomorpholine S,S-dioxide, piperidine, pyrrolidine, aziridine, pyridine, imidazole, 1,2,3-triazole, 1,2,4-triazole, thiazole, thiazolidine, tetrazole, piperazine, furan, thiophene, tetrahydrothiophene, tetrahydrofuran, dioxane, 1,3-dioxolane

tetrahydropyran, and

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wherein the heterocycle is optionally mono- or di-substituted on carbon or nitrogen with R₆, optionally mono- or di-substituted on carbon with hydroxy, -N(R₆)₂, or -OR₆, optionally mono or di-substituted on carbon with the mono-valent radicals -(C(R₆)₂)_sOR₆ or -(C(R₆)₂)_sN(R₆)₂, or optionally mono or di-substituted on a saturated carbon with divalent radicals -O- or -O(C(R₆)₂)_sO-;

5

R₆ is hydrogen, alkyl of 1-6 carbon atoms, alkenyl of 2-6 carbon atoms, alkynyl of 2-6 carbon atoms, cycloalkyl of 1-6 carbon atoms, carboalkyl of 2-7 carbon atoms, carboxyalkyl (2-7 carbon atoms), phenyl, or phenyl optionally substituted with one or more halogen, alkoxy of 1-6 carbon atoms, trifluoromethyl, amino, alkylamino of 1-3 carbon atoms, dialkylamino of 2-6 carbon atoms, nitro, cyano, azido, halomethyl, alkoxymethyl of 2-7 carbon atoms, alkanoyloxymethyl of 2-7 carbon atoms, alkylthio of 1-6 carbon atoms, hydroxy, carboxyl, carboalkoxy of 2-7 carbon atoms, phenoxy, phenyl, thiophenoxy, benzoyl, benzyl, phenylamino, benzylamino, alkanoylamino of 1-6 carbon atoms, or alkyl of 1-6 carbon atoms;

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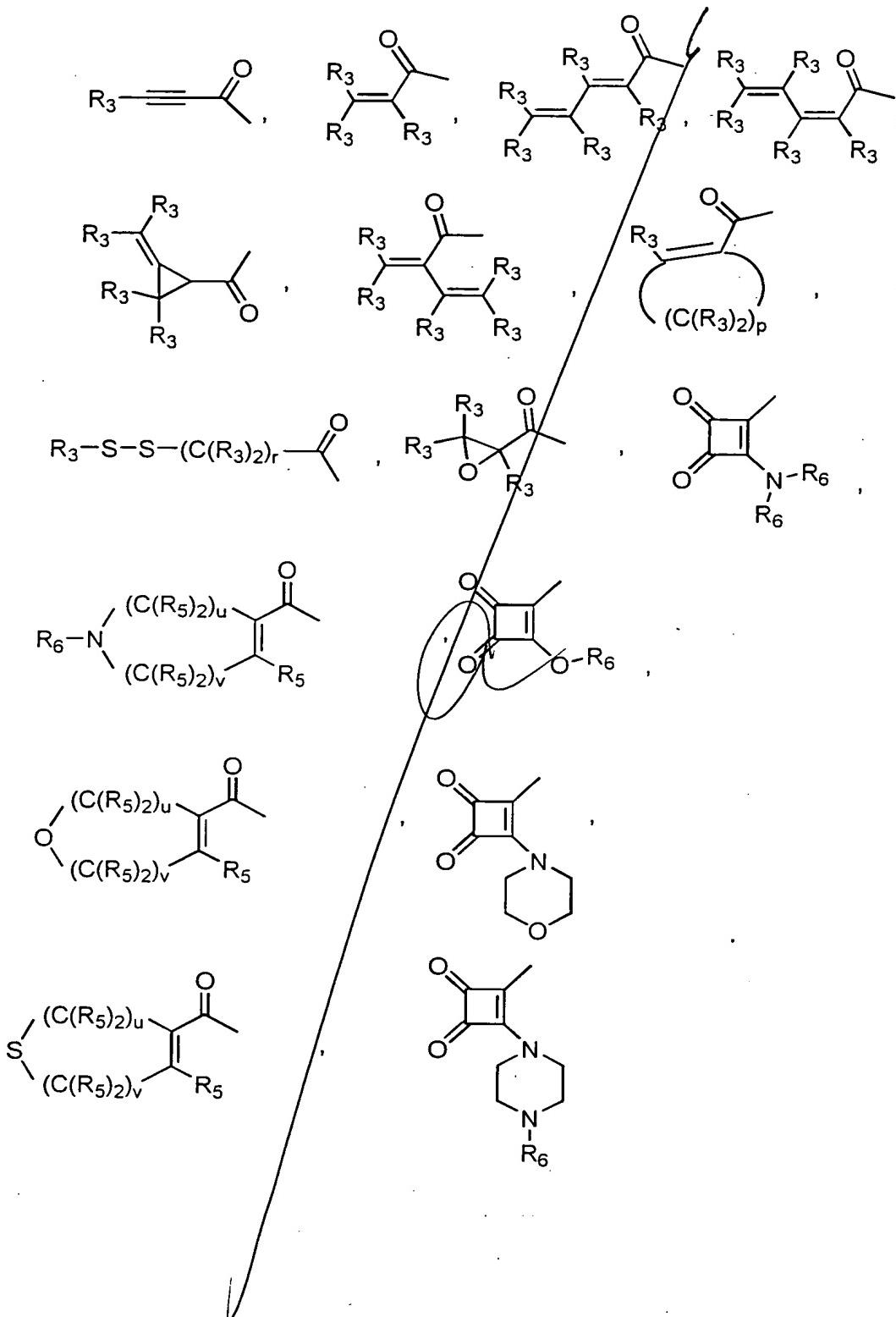
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R₂, is selected from the group consisting of

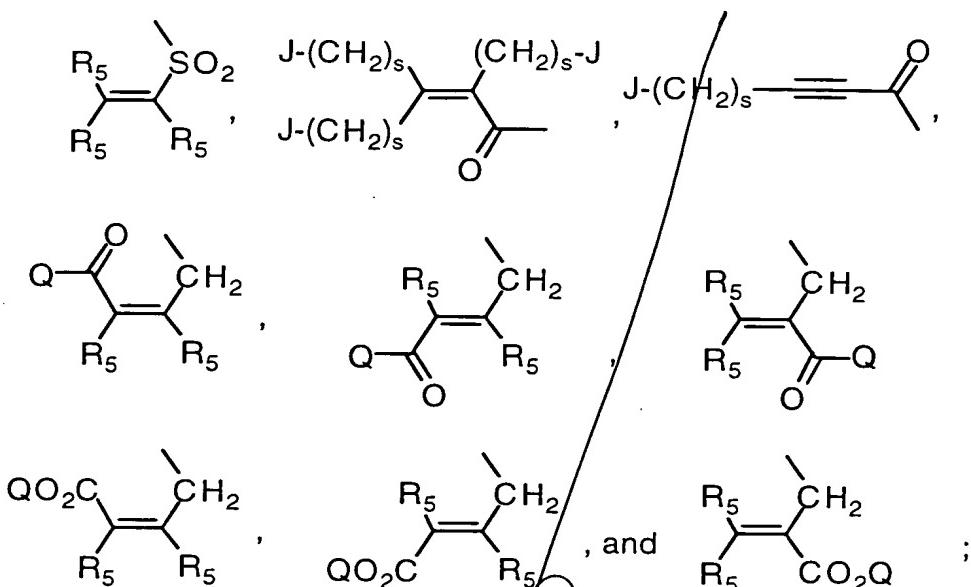
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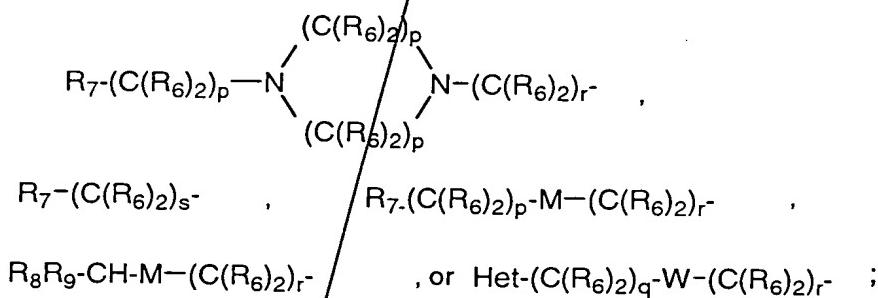
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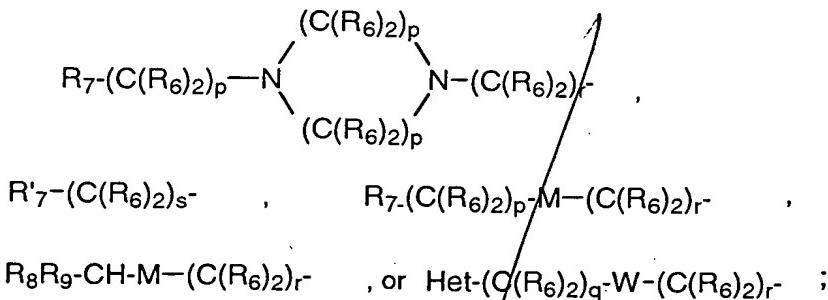


R₃ is independently hydrogen, alkyl of 1-6 carbon atoms, carboxy, carboalkoxy of 1-
5 6 carbon atoms, phenyl, carboalkyl of 2-7 carbon atoms,



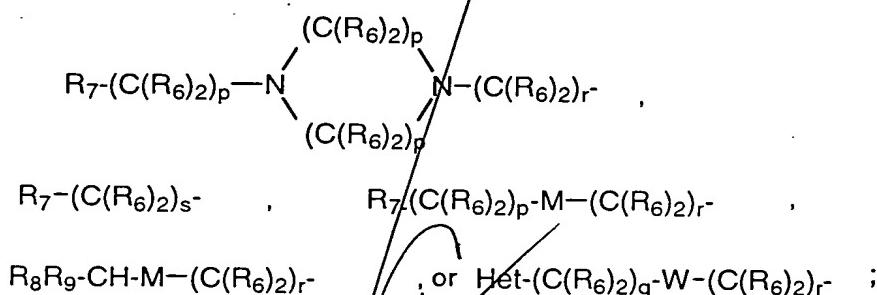
with the proviso that at least one of the R₃ groups is selected from the group
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R5 is independently hydrogen, alkyl of 1-6 carbon atoms, carboxy, carboalkoxy of 1-6 carbon atoms, phenyl, carboalkyl of 2-7 carbon atoms.

5



R₈, and R₉ are each, independently, -(C(R₆))_rNR₆R₆, or -(C(R₆))_rOR₆;

10

J is independently hydrogen, chlorine, fluorine, or bromine:

Q is alkyl of 1-6 carbon atoms or hydrogen:

$a = 0$ or 1 :

g = 1-6;

15 k = 0-4.

n is 0-1.

$$n = 2\text{-}4$$

$a=0-4$:

$r = 1.4$

S = 1.6

$\mu = 0.4$

20 s = 1-6;
u = 0-4 and v = 0-4 , wherein the sum of u+v is 2-4;

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or a pharmaceutically acceptable salt thereof,
provided that

when R₆ is alkenyl of 2-7 carbon atoms or alkynyl of 2-7 carbon atoms, such
alkenyl or alkynyl moiety is bound to a nitrogen or oxygen atom
5 through a saturated carbon atom;

and further provided that

when Y is -NR₆- and R₇ is -NR₆R₆, -N(R₆)₃⁺, or -NR₆(OR₆), then g = 2-6;

when M is -O- and R₇ is -OR₆, then p = 1-4;

when Y is -NR₆-, then k = 2-4;

10 when Y is -O- and M or W is -O-, then k = 1-4

when W is not a bond with Het bonded through a nitrogen atom, then q = 2-4
and when W is a bond with Het bonded through a nitrogen atom and Y is -O- or -
NR₆-, then k = 2-4, which are useful as antineoplastic agents and in the treatment of
polycystic kidney disease.

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